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[54] LIQUID PHASE PROCESS FOR DIMETHYL ETHER SYNTHESIS

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Related U.S. Application Data

[63] Continuation of Ser. No. 602,988, Oct. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 381,450, Jul. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 143,799, Jan. 14, 1988, abandoned.

[51] **Int. Cl.**[5] **C07C 41/01**

[52] **U.S. Cl.** **518/700**

[58] **Field of Search** 518/700

[56] **References Cited**

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[57] **ABSTRACT**

A one-step process is disclosed for the coproduction of dimethyl ether and methanol from synthesis gas containing H_2, CO, and CO_2. The synthesis gas is contacted with a mixture of methanol synthesis and methanol dehydration catalysts suspended in an inert liquid in a three phase reactor system. Maximum dimethyl ether productivity and product energy recovery are realized by controlling the fraction of methanol synthesis catalyst in the range of about 75 to about 90 wt % of the total catalyst mixture. A methanol-rich fuel product containing dimethyl ether can be obtained when this range is about 95 to about 99.9 wt %.

10 Claims, 4 Drawing Sheets